

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
The Establishment of Policies and Service Rules for)	
the Broadcasting-Satellite Service at the 17.3-17.7)	
GHz Frequency Band and at the 17.7-17.8 GHz)	
Frequency Band Internationally, and at the 24.75-)	IB Docket No. 06-123
25.25 GHz Frequency Band for Fixed Satellite)	
Services Providing Feeder Links to the)	
Broadcasting-Satellite Service and for the Satellite)	
Services Operating Bi-directionally in the 17.3-17.8)	
GHz Frequency Band)	

REPLY OF TELESAT CANADA

Telesat Canada ("Telesat") welcomes the opportunity to provide these reply comments in the Further Notice of Proposed Rulemaking ("*Further Notice*") phase of the above captioned proceeding.¹ Among other things, the *Further Notice* seeks input with respect to the potential for 17/24 GHz reverse-band transmissions to interfere with uplink feeder link reception on 12/17 GHz DBS satellites. To mitigate such space-path interference potential, the *Further Notice* seeks comments on whether the Commission should adopt an off-axis power flux density ("pfd") threshold that would trigger coordination between a 17/24 GHz satellite and nearby 12/17 GHz DBS spacecraft, and whether a minimum orbital separation should also be required. (*Further Notice* at ¶¶ 183-86)

Telesat has a keen interest in these matters. As the Commission is aware, Telesat currently has four 12/17 GHz DBS satellites co-located at 82°WL and 91°WL providing direct-to-home ("DTH") service to close to 2 million subscribers in Canada, and controls another 12/17 GHz DBS satellite at 72.5°WL providing DTH service into the United States for DIRECTV. Telesat was also the successful applicant for the award of the

¹ FCC 07-76, 22 FCC Rcd 8842 (2007) (*Further Notice*).

17/24 GHz orbital positions at 72.5°WL, 82°WL, 86.5°WL and 118.7°WL in the recent Industry Canada licensing proceeding.²

With regard to the space-path interference issue, in its comments DIRECTV urges the Commission to require coordination if a 17/24 GHz satellite will produce an off-axis pfd of -93 dBW/m²/24 MHz or greater at the victim 12/17 GHz DBS satellite, and to require the orbital spacing between a 17/24 GHz BSS space station and a 12/17 GHz DBS orbital locations to be not less than 0.4°.³

Both of these conditions have technical underpinnings in the relatively conservative assumptions of 600K noise temperature, 0 dBi off-axis gain of the victim receive satellite, and a 6% allowed increase in system noise temperature (the ITU criterion for this interference mechanism as stated in Annex 4 of Appendix 30A of the ITU *Radio Regulations*). In addition, the latter condition (orbital spacing of not less than 0.4°) also presupposes a worst case (i.e., most interfering) situation where the peak EIRP of the interfering satellite is 65 dBW and the off-axis discrimination of the interfering satellite is 40 dB.

DIRECTV references ITU Recommendation ITU-R BO.1835 as the source for identifying a minimum orbital separation and includes a draft copy of that Recommendation with its Comments. While Telesat agrees with DIRECTV that all administrations in Region 2, when licensing 17/24 GHz systems, should take into account the analyses and results contained in ITU-R BO.1835, Telesat would note that ITU-R BO. 1835 does not establish generally applicable minimum orbital separation requirements. More to the point, Telesat believes that the establishment of a minimum orbital separation based on technical criteria that may not reflect the true coordination situation between two satellite networks would be overly rigid and restrictive in terms of efficient orbit utilization, and possibly preclude the development of viable systems.

² Industry Canada, DGRB-001-06 *Call for Applications to License Satellite Orbital Positions* (July 2006).

³ DIRECTV Comments (November 5, 2007) at 3-6. Furthermore, DIRECTV proposes that the ±0.2° cluster box associated with the DBS Plan also be taken into account so the requirement would be a minimum orbital spacing of 0.6° between 17/24 GHz BSS space stations and the nominal DBS location allocated under the DBS Plan.

For the same reasons, Telesat opposes establishing an orbital spacing minimum as a coordination threshold, or requiring a waiver if a 17/24 GHz operator proposes to operate at a smaller separation distance. Rather, Telesat supports a mechanism consistent with the internationally accepted method of the ITU *Radio Regulations* whereby a 6% noise increase criterion is used to identify coordination requirements.

Opposition to the mandating of a strict orbital spacing minimum is found in the comments of other satellite operators as well. For example, noting that there is a range of views among operators as to how far a 17/24 GHz satellite must be from a co-frequency 12/17 GHz DBS satellite to avoid harmful interference,⁴ EchoStar states:

An interference analysis based solely on a fixed orbital separation distance – whether it be 0.1 or 1.0 degrees – would be both under- and over-inclusive. A satellite with high levels of undesired radiation in the direction of the adjacent DBS satellite may not be able to operate within even one degree of a DBS satellite without causing harmful interference. Yet a Reverse Band satellite should be able to be designed with correspondingly low levels of off-axis radiation to be able to operate without issue as close as 0.1 degrees away from a DBS satellite. DIRECTV highlights correctly the need for ‘proper care ... in the design of the’ Reverse Band satellite. DIRECTV at 26. Providers should have the design incentive to maximize the flexibility available to its Reverse Band satellite operations. (EchoStar at p. 3)

Rather than relying on orbital separation, EchoStar supports a coordination threshold based on a pfd limit of -93 dBW/m²/24 MHz. (EchoStar at p. 3-4)

SES Americom indicates that the Commission could adopt an orbital spacing minimum (0.2 to 0.3 degrees), subject to waiver if an operator proposes to operate at a smaller separation distance, but states that it has no objection to the proposal to use an off-axis pfd limit as a coordination trigger, as recommended by EchoStar. (SES Americom at p.12)

⁴ EchoStar notes that in this proceeding DIRECTV has indicated that satellites could be as close as 0.1 degrees apart and avoid such interference, while SES Americom has stated that they could be as close as 0.2-0.3 degrees. See EchoStar Comments at p. 3 and footnotes 2 and 3.

As noted above, Telesat suggests a percentage increase in noise coordination threshold criterion. However, in the alternative, if the Commission were to find that a coordination threshold based on pfd is necessary to facilitate analyses, the value of -93 dBW/m²/24 MHz appears most reasonable for this purpose, but without a further condition of a stipulated orbital spacing minimum.

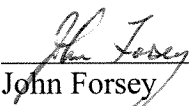
Finally, Telesat endorses the proposal that all 17/24 GHz BSS applicants be required to provide detailed technical information, including measured data and summaries thereof in chart and/or graphic form over an angular range of $\pm 90^\circ$ in the plane of the GSO arc for the reasons given by DIRECTV. (DIRECTV at p. 6)

Telesat appreciates the opportunity to provide its reply comments on these important matters.

Respectfully submitted,

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